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NEWS OF THE SCIENTIFIC ENGINEERING TECHNICAL SOCIETIES

All-Union Council of Scientific Engineering Technical Societies

In 1947, the Odessa Council and branches of the societies turned their attention to the problems of reconstruction and development of industry and the rural and urban economy of the Odessa district. During 1947 there were 29 scientific technical conferences and meetings attended by 17,000 engineers and technologists, in which 350 reports and lectures were delivered. More than 150 members of NITO are receiving help in studying for a science degree; six men presented dissertations in 1947.

The members completed 45 scientific technical projects including the following: direct-action locomotive with internal combustion (brigade under Prof V. A. Dobrovol'skiy); supplementary artifical pollination of plants (Candidate of Agricultural Sciences A. S. Musiyko); methods of fighting drought on the steppes of the Ukraine (Prof A. A. Vorbin); and complex mechanization of the canning industry (Docent M. Ya. Dikiy).

However, the All-Union Council of NITO, has noted the presence of some basic shortcomings in the supervision of the Odessa Council of NITO, and has recommended improvements. Among these was the approval of the following structure for the Organizing Bureau of the Odessa Oblast Council of NITO; a committee for implementing scientific and engineering achievements in industry; a bureau for scientific technical aid in gas production; an institute for advancement of knowledge of the NITO members; a bureau for the exchange of scientific technical experience; and sections for special operations which are not covered in the branches of NITO.

Changes in the staff of the Organizing Bureau of the Odessa Oblast Council of NITO were specified as follows: Aleksandr Samsonovich Musiyko, Candidate of Agricultural Science and Laureate of the Stalin Prize, was confirmed as first deputy chairman; Prof N. S. Tsonev, Engineers B. M. Lever, M. A. Gefter, and R. S. Cherkasskiy were removed from the staff of the NITO council due to their inactivity.

In recognition of the outstanding public activity of the president of the Odessa Council of NITO, Prof Viktor Afanas'yevich Dobrovol'skiy, director of technical sciences, it was specified that he be made an honorary member of the Society of Mechanical Engineers.

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Society of Smiths and Press Operators

On 28 - 30 January, at the Moscow Machine-Tool Insititute imeni I. V. Stalin, the first meeting of the All-Union Scientific Engineering Technical Society of workers of the forging-stamping industry took place in Moscow. Delegates chosen by the branches and local units of the Society of Moscow, Leningrad, Kiev, Tallin, Mariupol, etc. took part in the work of the meeting.

After hearing the report of M. V. Storozhev, president of the Organizing Bureau of VNITOKSH (All-Union Scientific Engineering Technical Society of Smiths and Press Operators), and the joint reports of the representatives of the branches given by P. V. Kamnev (Leningrad), acting president of the board, and I. V. Klimov (Gor'kiy), president of the board, the assembly acknowledged the work of the Organizing Bureau of the Society as fully satisfactory.

Comrades M. F. Vladimirov, K. S. Ginzburg, A. V. Golovin, A. I. Zimin, I. V. Klimov, V. I. Kukhtarev, V. T. Meshcherin -- as an acting chairman, M. V. Storozhev -- as chairman, Ye. P. Onksov, and M. T. Tsukerman -- as an acting chairman, were elected to the presiding council.

I. S. Pobedin made a scientific-technical report on "Soviet Forge-Press Machine Construction," and the assembly decided that, despite successes in this field, the forging-stamping equipment industry still was not meeting the growing demands of the country and in the near future could prove to be a drag on development of domestic industry. The assembly recommended that all forge-press machine construction be united under one ministry and that a scientific research center be created for the forge-stamping industry.

Lively interest was aroused by the joint report of R. S. Bykov and Ya. Ya. Grannikov on "The Technology of Heating Forgings by Means of High-Frequency Currents" which pointed out that high-frequency electronic heating in forging is already a plant process. The assembly directed the attention of the USSR Electrical Industry Ministry of the necessity for the quickest possible development of serial production of various standard-size motor-generators.

A. A. Skvortsov reported on the "Use of Furnaces with Revolving Hearths and Wells," and the assembly agreed that such furnaces have great prospects in the modern mechanized forge-press and stamp mills. It was noted that Soviet industry is ahead in the use of large revolving furnaces.

N. V. Golikov reported on "Mechanization and Automatization of Work in Forging-Stamping Mills," V. P. Romanovskiy on "Basic Problems of the Bending Process," and Ya. S. Golitsyn on "The History of Development of Forging Techniques of the USSR."

Society of Foundry Workers

The All-Union Society of Founders held a special conference on centrifugal casting, 9 - 12 December 1945 in Moscow. Representatives of many plants of Moscow Leningrad, Dnepropetrovsk, and other cities, and workers of machine-building ministries, higher technical schools, and scientific research institutes took part.

Reports were made by S. Ye. Rozenfel'd, Candidate of Technical Sciences; Prof N. P. Berg, Doctor of Technical Sciences; Grechin and T. B. Kanevskaya, Candidate of Technical Sciences; Docent V. P. Ikonnikov, Engineers D. S. Konstantinov, S. B. Yudin, B. Ye. Vagin, A. I. Baykov, Pozdyshev, K. V. Tolstikhinaya, and Ivanov.

On the basis of the conference it can be said that important work has been done in the field of centrifugal casting in recent years.

1. Centrifugal casting is proceeding from the experimental stage to industrial implementation. For example, the production of hollow steel cylindrical ingots from steel alloys has been mastered; successful experiments in casting of hollow steel ingots from carbon steels have been carried out, indicating the possibility of replacing forgings and rolled iron with centrifugal castings. Other techniques mastered include the production of cast-iron sleeves of various sizes by the use of metallic and lined molds, laminated castings from ferrous and nonferrous alloys, castings from special alloys, brake drums from nonferrous metals, and centrifugal casting of percision molds and dies.

2. A group of new technological processes have come into being, coating of metallic molds by means of spraying, and production of laminated castings by means of systematic pouring of different alloys.

3. Centrifugal machines of the console and roller type have been developed.

4. The number of engineering technical specialists in centrifugal casting has greatly increased.

Society of Power Engineers

In Leningrad 8 - 13 December 1947 a scientific technical meeting on electric drive was held which was called by the electric drive and industrial electrical equipment sections.

The session discussed questions of the theory of electric drive; generalization of design experience and utilization of electric drive and of automatic control systems; and further means of developing electric drives. The solution of all these problems is of very real importance at present for the national tasks set before the scientists and engineers working in the field of electric drive under the first postwar Five-Year Plan. The meeting was attended by 327 persons from 38 of the most important USSR industrial centers.

There were 60 reports made. Among those heard at the plenary session were Prof Ye. V. Nitusov, Doctor of Technical Sciences, MEI (Moscow Electrical Institute) on "Basic Problems in Theory and Practice of Electric Drive"; Docent V. A. Shubenko, Candidate of Technical Sciences (Ural Industrial Institute) on "A Method of Generalized Determination and Analysis of Equivalent (Mean Square) Moments of Electric Motor Drives"; and Engineer Ye. A.Legbovich, (Laureate of the Stalin Prize, on "Graphic Symbols for Elements in Electric Drive Diagrams." The remaining reports were read at the meetings of the five sections: (1) theoretical and general problems, (2) electric drive in metallurgy, (3) electric drive for cold metal-working machinery and machinery of other industrial branches, (4) control apparatus and (5) electric drive for ships.

The greatest interst was shown in discussions of continuous control of electric drive with an electromechanical amplifier, engineering methods for calculating complex systems, modelling, ionic drive, electronic regulators, selection of electric motor sizes, drives for cold rolling mills, calculations of losses in mechanical transmission and selection of gear ratios, control apparatus.

The problem of continuous electromechanical control of electric drives was the theme of six reports. Greatest attention was paid to the analysis of transient processes for different cases met with in practice, and also to the selection of rational control schemes, introduction of stabilizing feedback, the problem of an efficient number of amplification stages, etc.

In spite of the high theoretical level of the reports on engineering methods for calculating complex systems, (particularly their transient conditions), and in spite of the authors' tendency toward broad generalizations, the proposed methods did not receive general recognition. The Conference deemed it advisable that this series of problems be studied further in order to find acceptable general methods for calculating complex systems in practice.

The reports on modelling aroused great interest. They set forth a theoretical basis for modelling as a method for calculating complex systems of electric drive, and pointed out technical means for reproduction of basic nonlinearity as, for example, saturation in electrical machines, dry friction, free play in mechanical transmission, etc.

The delegates listened with special attention to the report of Prof R. L. Arnov, Doctor of Technical Sciences, on "Transient Processes in Circuits With Iron" presenting the method worked out by the author for the analytical calculation of irregualr processes on the basis of formulas approximating the magnetization curve. Prof.G. I. Shturman, Doctor of Technical Science, in his report on "Induction Machines with Open Magnetic Circuits," aroused considerable interest. He formulated basic theoretical conditions for the machines and gave the method for their calculation.

The reports on ionic drive examined its basic characteristics, gave a method for calculating transient processes, and explained the range of application of the ionic drive. The Conference members confirmed the expediency of working out the serial production of completely automatic low-power ionic drives and pointed out the necessity for quickest possible operational utilization of high-power experimental equipment for rolling mills and mine lifts.

The participants showed a lively interest in electronic control systems and electronic regulators. Domestic systems of control not having any precedent in practical applications in other countries, must, to some extent, replace electromechanical regulation. At the same time, it was found necessary to broaden the field of application of electronic regulators.

Quite a few reports were devoted to the problems of selecting suitable power ratings for electric drives. It was found that this problem has not definitely been solved, especially as applied to rolling mills.

In a detailed discussion on "Electric Drive for Metallurgy" of four reports on electric drives for cold rolling mills, the members noted that for further successful creation of high-production rolling mills, it is necessary to achieve the quickest possible transition to control systems based on the principle of control of technological factors, i.e., the maintenance of constant tension on the strip.

Interesting reports on the subject of electric drives for cranes were given by Engineer Ye. A. Leybovich, Laureate of the Stalin Prize.("Dinamo" Factory), on "Modern Drives for Crane-Hoist Machinery"; Engineer S. N. Veshenevskiy on "Selection of the Proper Type of Current for Electric Drive for Cranes in a Martin Plant"; and Engineer A. I. Sheynman on "The Modern Improved System of Contactor Control for Electric Drives for Crane Machinery on Direct Current." A few important practical conclusions were made on the basis of these reports, in particular, the expediency of wider utilization of alternating current.

Two reports on electric drives for metal-cutting machines were heard.

Problems concerning mechanical transmission formed the theme of three reports.

Two reports discussed the utilization of hydraulic drives. The session noted that in the mining industry where explosion precautions are very vital, hydraulic drives could be very expedient.

In the field of control mechanism for electric drives the greatest interest was aroused by the reports of: Prof O. B. Bron, Doctor of Technical Science, ("Electrosila" Works) on "Methods for Perfecting the Commutating Elements of Automatic Control Equipment"; Docent P. V. Sakharov (Ministry of Electric Industry) on "Low-Voltage Commutating and Starting Control Equipment"; Prof O. B. Bron discussed primarily the durability of contactor elements and arc extinguishing systems. Docent P. V. Sakharov reported on nomenclature of equipment manufactured by the Ministry of the Electrical Industry, and outlined future prospects for production of low-voltage equipment in the USSR.

Problems of operation and reconditioning of electric drives were discussed in two reports.

The Conference members, learned about the organization of electric drive operation at the Kuznetsk-Metallurgical Combine; the requirements of metallurgy for different kinds of electrical arrangements, and operational ratings of motor and control equipment of different type of domestic and foreign manufacture.

The conference pointed out the need for organizing, in the near future, meetings on electric drive and electrical equipment for the textile, rubber, machine-tool building, mining and ore-processing industries; also to hold periodic meetings on nomenclature of electric drive equipment.

The members unanimously adopted a voluminous resolution and underlined the importance of publishing quickly the work of the conference.

Before the Conference adjourned, the members voted with great enthusiam to send greetings to Stalin.

Leningrad Council of Scientific Engineering -- Technical Societies

The Committee for Promotion of Gas Service in Leningrad was founded at the beginning of 1947 to coordinate the work of organizations and enterprises supplying Leningrad with gas.

Representatives of Leningrad's NITO (miners, welders, construction and housing workers, heating, ventilation and heat supply workers, smelters, machinists, water transport and power workers) were present at the Committee's plenary meetings. Also present were representatives of various organizations concerned with problems of gas supply for Leningrad. A series of problems dealt with at the Committee's meetings showed clearly where the Leningrad NITO could render practical assistance in gasification. These problems included:

1. Mechanization and speed-up of labor-consuming operations in laying gas pipe in the streets and into the homes.

2. Investigation of design, materials, casting technology, the manufacture of bronze and cast-iron valves in order to determine the causes for the great number of flaws and leakages.

3. Possibility and expediency of utilizing for Leningrad the gas produced at the experimental nine-chamber bank of shale-distillation furnaces in Kokhtla-Yarve.

4. Introduction of gas-pressure welding of gas pipes of medium and small diameters, etc.

The Committee made decisions and took steps on a series of specific measures in 1947.

The use of electric drills, so widely adopted in mining, was recommended for mechanizing and speeding up the work of piercing walls, foundations and overlaps of houses. Results, verified by tests, showed that the time necessary for piercing was decreased at least 25 times with a corresponding reduction in manpower and a considerable improvement in quality.

Engineer G. S. Lyakhovitskiy, committee member, at the meeting on 7 May 1947, read a rather intersting report on "New Methods of Mechanizing Pipe Laying for Street and Yard Gas Pipes and Other Pipe Lines With a Minimum Breaking-Up of Pavement." He reported on his experiences while working in the Scientific Research Institute, Emergency-Rescue Service of the Navy, and described a number of examples of pipe laying using the new methods.

The Leningrad Department of NITO, in May 1947, took an important step for improving Leningrad's gas supply by organizing a conference on geology, mining, ore-processing plants, and the utilization of bituminous shale of the Baltic provinces. The outstanding specialists in this field from Leningrad, Moscow, and the Estonian SSR participated. Special attention was given to the problems of organization of mining and mechanization for the extraction of shale.

The Committee had delegated the Leningrad Builders Division of NITO to take under consideration the report by Engineer M. A. Nechayev, committee member, on the construction in Leningrad of artificial subterranean gas-storage tanks, of the tunnel type, to replace a number of huge, metal-consuming steel gas tanks that are above ground.

Another project by Engineer M. A. Nechayev on storage of summer surpluses of shale gas in natural subterranean gas storage tanks is being prepared for experimental verification by the Committee and the Leningrad Division of NITO.

In the event of successful realization of the project, an 18 - 20 percent increase in the supply of gas for Leningrad would become possible, as well as a substitution of gas for approximately one million cubic meters of wood per year, and increased insurance against interruptions caused by difficulties in supplying gas by long-distance pipeline. The project was considered to be of great value and recommendations were made to verify it by test and to put it to practical use.

The Committee confirmed the desirability of utilizing the shale-produced gas of Khokhtla-Yarve, properly purified, by means of a long-distance gas pipeline--- Kokhtla-Yarve-Leningrad -- now under construction. The gas supply at present available in Leningrad would then be increased by approximately 20 percent.

The Committee approved a report by Engineer V. A. Zhukov on the increase in efficient utilization of coke gas, and on the influence of carbon dioxide content in gas on gas-burner efficient. The speaker reported the results of his thorough experimental work on determination of the most favorable calorific value for gas, which is of utmost importance in establishing a standard for household gas.

Engineer I. M. Artukhov committee member, completed an important theoretical investigation -- "The Best Parameters and the Most Favorable Diameters for Long-Distance Gas Pipelines." A set of rules useful for calculation of gas mains was given in his work.

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